

III. REMARKS

1. Claims 13-35 are cancelled. Claims 36-61 are new. An IDS is being submitted herewith.

2. Claims 36-61 are not unpatentable over Younes (US 5,107,830) under 35 U.S.C. §103(a).

Claim 36 recites using an EMG signal intensity and a lung volume value to determine from the EMG signal intensity and lung volume value at least one of the two relations; an EMG signal intensity for a given lung volume value and a lung volume value for a given EMG signal intensity. Claim 36 also recites increasing or decreasing the ventilatory assist level depending on whether the relation has increased or decreased by at least a given percentage. These features are not disclosed or suggested by Younes.

Younes describes a first embodiment of their invention, illustrated in Figures 8-10 and described in the specification between column 15, line 1 and column 19, line 38. In this first embodiment, a pressure transducer 48 is operatively connected to the piston chamber 24 to determine the pressure in the chamber 24. Also, a velocity transducer 57 is mounted to the core of the motor 16 to generate a signal 58 proportional to the rate of motion of the piston head 14.

An electronic module 22 functions to provide an electrical signal drive input 60 to the motor 16 to cause the motor 16 to generate a drive force to the piston 14 of a pattern and magnitude that reproduces, as closely as possible, the desired pattern and magnitude of pressure to be delivered to the patient from the

chamber 24. More specifically, the motor 16 responds to the instantaneous difference, after suitable amplification, between a desired output, being the command signal, and the actual output.

In the electronic circuitry 22, the summing amplifier 72 also receives feedback from the velocity transducer 57 by line 58. This additional feedback tends to prevent rapid changes in pressure which otherwise may trigger oscillations.

The operator selects a function or combination of functions to be channeled to a summing amplifier 72 and variable gain controls permit selection of the magnitude of the assist:

- (a) Inspired flow: When the high frequency components of the output of the velocity transducer 57 in line 58 are filtered out, the remaining signal agrees very well with flow measured independently at the airway 34 and hence represents, at any given time, the instantaneous gas flow rate. Accordingly, the velocity flow signal in line 58 is passed through a low pass filter 88 and the resulting signal 89 is used as a command signal in line 70 for the ventilator unit 10 to produce pressure in proportion to inspired flow (i.e. resistive assist).
- (b) Inspired volume: The signal related to inspired flow (line 89) may be integrated in integrator 92 to provide a signal corresponding to inspired volume and hence represents, at any given time, the instantaneous gas flow volume. When the resulting signal is routed to the summing amplifier 72 by line 70, the ventilator unit 10 develops pressure in proportion to inspired volume.

- (c) Ramp generator: This mode of operation permits the ventilator unit 10 to function independently of patient effort and provides a controlled ventilation. This function can be activated by the operator by throwing switch 98 to bring the function generator 100 into the circuit.
- (d) D.C. output: An adjustable DC output provided by an offset amplifier 101 also is routed to the summing amplifier 72, to result in the generation of continuous pressure.

This first embodiment of Younes fails to disclose or suggest the use of an EMG signal intensity and a lung volume value, to determine from the EMG signal intensity and lung volume value at least one of the two following relations: an EMG signal intensity for a given lung volume value and a lung volume value for a given EMG signal intensity, and to increase or decrease the ventilatory assist level depending on whether the relation has increased or decreased by at least a given percentage as is claimed by Applicant.

Younes also discloses a second embodiment with reference to Figure 11 and described in the specification from column 19, line 39 to column 21, line 59.

In this embodiment a rate of flow of gas from the chamber 202 to the patient 208 is measured by a flow meter 209 mounted on the inhalation conduit 210 which generates an instantaneous flow signal. This instantaneous flow signal is also integrated using an integrator 213 to provide a signal corresponding to instantaneous inhaled volume 214, i.e. an electrical signal indicative of the instantaneous volume of flow of gas through the inhalation conduit 210. These flow and volume signals are summed

using a summing amplifier 218 to generate a composite output signal.

A differential pressure transducer 227 measures a pressure gradient between a point upstream and a point downstream from a one-way valve provided on the inhalation conduit 210. The output of the differential pressure transducer 227 is also channelled to the summing amplifier 218.

The output of the summing amplifier 218 is supplied to a motor 205 actuating a piston 201 to generate a positive pressure component.

Again, in the second embodiment of Younes, there is no disclosure or suggestion of using an EMG signal intensity and a lung volume value, to determine from the EMG signal intensity and lung volume value at least one of the two following relations: an EMG signal intensity for a given lung volume value and a lung volume value for a given EMG signal intensity, and to increase or decrease the ventilatory assist level depending on whether the relation has increased or decreased by at least a given percentage, as is claimed by Applicant.

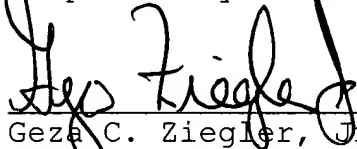
Thus, since Younes does not disclose or suggest each feature of Applicant's invention as recited in claim 36, the claim should be allowable. Claim 49 is directed to similar subject matter and should also be allowable for similar reasons. Claims 37-48 and 50-61 should be allowable at least by reason of their respective dependencies.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly

novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, favorable reconsideration and allowance is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

A check in the amount of \$270 is enclosed for a one-month extension of time and three extra dependent claims. The Commissioner is hereby authorized to charge payment for any fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,



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11 Mar 2005

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